

WHAT IS CLAIMED IS:

1. A semiconductor device for transmitting information by using an induction field as a transmission medium, comprising:

5 an IC chip for storing and processing information to be transmitted;

a coil for generating the induction field; and connecting terminals provided at an end of the coil and electrically connected to the IC chip,

10 wherein the coil and the connecting terminals are formed of the same metal plate that is patterned.

2. The semiconductor device according to claim 1, wherein the IC chip, the coil, and the connecting terminals are encapsulated with a resin to be
15 integrated with one another.

3. The semiconductor device according to claim 2, wherein at least one side of the coil is exposed
20 from a surface of the resin.

4. The semiconductor device according to claim 2, wherein the IC chip and the connecting terminals are connected by wires, and wherein the wires are
25 encapsulated with the resin.

5. The semiconductor device according to claim

2, wherein the IC chip and the connecting terminals are connected in flip chip connection.

6. The semiconductor device according to claim
5 2, wherein a part of one side of the coil is bonded and fixed with a tape.

7. A semiconductor device for transmitting information by using an induction field as a
10 transmission medium, comprising:

an IC chip for storing and processing information to be transmitted;

an IC chip supporting section for mounting the IC chip thereon;

15 a coil for generating the induction field; and connecting terminals provided at an end of the coil and electrically connected to the IC chip,

wherein the IC chip supporting section, the coil, and the connecting terminals are formed of the
20 same metal plate that is patterned.

8. The semiconductor device according to claim 7, wherein the IC chip, the IC chip supporting section, the coil, and the connecting terminals are
25 encapsulated with a resin to be integrated with one another.

9. A method of producing a semiconductor device that transmits information by using as a transmission medium an induction field generated from a coil electrically connected to an IC chip,

5 comprising the steps of:

preparing one sheet of metal plate;

forming a metal frame having at least a coil pattern and a connecting terminal pattern formed at an end of the coil pattern, by patterning the metal
10 plate;

mounting the IC chip on the metal frame;

electrically connecting the connecting terminal pattern to the IC chip; and

encapsulating the IC chip and the metal frame
15 with a resin to integrate them.

10. The method of producing a semiconductor device according to claim 9, wherein the patterning of the metal plate is performed by stamping or
20 etching.

11. The method of producing a semiconductor device according to claim 9, wherein electric connection of the connecting terminal pattern and the
25 IC chip is performed by wire bonding, and wherein wires formed by the wire bonding are encapsulated with the resin.

12. The method of producing a semiconductor device according to claim 9, wherein electric connection of the connecting terminal pattern and the IC chip is performed in flip chip connection.

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13. The method of producing a semiconductor device according to claim 9, further comprising a step of sticking a tape for coil pattern fixation on a part of one side of the coil pattern after the
10 connecting terminal pattern and the IC chip are electrically connected.

14. A method of producing a semiconductor device that transmits information by using as a
15 transmission medium an induction field generated from a coil electrically connected to an IC chip, comprising the steps of:

preparing one sheet of metal plate;

forming a metal frame having at least a coil
20 pattern, a connecting terminal pattern formed at an end of the coil pattern, and a tying section tying respective portions of the coil pattern, by patterning the metal plate;

mounting the IC chip on the metal frame;

25 electrically connecting the connecting terminal pattern to the IC chip;

sticking a tape for coil pattern fixation on a

part of one side of the coil pattern after the
connecting terminal pattern and the IC chip are
electrically connected;

- cutting the tying section; and
- 5 encapsulating the IC chip and the metal frame
with a resin to integrate them.

15. A method of producing a semiconductor
device that transmits information by using as a
10 transmission medium an induction field generated from
a coil electrically connected to an IC chip,
comprising the steps of:

- preparing one sheet of metal plate;
- forming a metal frame having at least a coil
15 pattern, a connecting terminal pattern formed at an
end of the coil pattern, an outer frame section, and
tying sections tying respective portions of the coil
pattern and tying the coil pattern and the outer
frame section, by patterning the metal plate;
- 20 mounting the IC chip on the metal frame;
- electrically connecting the connecting terminal
pattern to the IC chip;
- sticking a tape for coil pattern fixation on a
part of one side of the coil pattern after the
25 connecting terminal pattern and the IC chip are
electrically connected;
- cutting the tying section tying respective

portions of the coil pattern;

encapsulating the IC chip and the metal frame
with a resin to integrate them; and

cutting the tying section tying the coil
5 pattern and the outer frame section.

16. The method of producing a semiconductor
device according to claim 15, wherein a plurality of
semiconductor devices is produced from the one sheet
10 of the metal plate.

17. A method of producing a semiconductor
device that transmits information by using as a
transmission medium an induction field generated from
15 a coil electrically connected to an IC chip,
comprising the steps of:

preparing a metal plate;

forming a metal frame having at least the IC
chip supporting section pattern on which an IC chip
20 is mounted, a coil pattern, and a connecting terminal
pattern formed at an end of the coil pattern, by
patterning the metal plate;

mounting the IC chip on the IC chip supporting
section;

25 electrically connecting the connecting terminal
pattern to the IC chip; and

encapsulating the IC chip and the metal frame

with a resin.

18. An electrophotographic apparatus on which
a detachable process cartridge is mounted,

5 comprising:

a semiconductor device including an IC chip for
storing and processing information to be transmitted,
a coil for generating an induction field, and
connecting terminals provided at an end of the coil
10 and electrically connected to the IC chip, the coil
and the connecting terminal being formed of the same
metal plate that is patterned;

the process cartridge on which the
semiconductor device is stuck; and

15 a transmission-reception unit for receiving
information from and transmitting information to the
semiconductor device.